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AN INTRODUCTION To a true METHOD For the Diſcovery of LONGITUDE at SEA.

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Humbly offer'd to the Conſideration of Both Houſes of Parliament.

By *Stephen Plank.* K

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An Introduction to a true Method for the Diſcovery of Longitude at Sea.

WHEN I reflect on the Numbers of worthy and learned Gentlemen, that now are, and have been, ſtudiouſly ſearching to acquire a Method for the Diſcovery of Longitude at Sea; and on the Meanneſs of my own Abilities, in an Undertaking of ſo high a Nature: I am Anxious of the Succeſs of my honeſt Intentions, and inclin'd to believe, that my poor Mite can be of no Value, when laid to a Maſs of ſuch learned Wiſdom: Yet, when I conſider the Obligations I owe my dear Country, and the Candour, and Condeſcention of thoſe moſt Honourable Patriots of It, who now worthily Grace theſe moſt Honourable Houſes of Parliament, *I* am humbly embolden'd to offer at their Feet, this following Method; the Veracity of which, *I* doubt not (when maturely Conſider'd by the Wiſdom of theſe Honourable Houſes) will evidently Appear, and be an effectual Means toward the attaining the End in it propos'd.

I humbly Hope, that thoſe Perſons that are pleas'd to obſerve the Motions of the Moon, will take Notice of the *S*eparation ſhe daily makes from thoſe *S*tars that are to the Weſt of her; and the Approach which ſhe daily makes to thoſe ſtars that are to the Eaſt of her, which Diſtance, (in her ſloweſt Motion) is 12 Degrees between her riſing one Night, to her riſing the next

Next ; and which ſaid Continual Separation, (in my humble Opinion) is ſufficient to diſcover the Longitude at Sea to one Degree, if not to half a Degree of Longitude.

The Poſſibillity of which, with humble Submiſſion, to the better Judgment of theſe Honourable Houſes, *I* will endeavour to demonſtrate, as clearly as lyes in my Capacity, thus: The Moon being perpetually making this Seperation from the fix'd ſtars, muſt conſequently make it gradually, as ſhe goeth round the Circumference of the Globe : for it is well known, that ſhe doth not move this Diſtance all at one time, therefore, let it be ſuppoſed, that the Moon be 20 Degrees to the Eaſt of the ſtar called *Aldebaran*, when ſhe riſeth on the Horizon of *London*, the next time of her riſing on the ſaid Horizon, ſhe will be at leaſt 32 Degrees from the ſaid ſtar, by which it is evident, that the Moon gaineth this Diſtance of 12 Degrees, as ſhe goeth round the 360 Degrees of Longitude on Earth ; ſo that if a Ship at that time, was to be where the Moon at riſing on their Horizon, was obſerv'd to be 26 Degrees, to the Eaſt of *Aldebaran* ; it is certain, that this ſhip cannot be in the ſame Degree of Longitude, as *London* is in ; ſeeing, that the Diſtance of the Moon from the ſaid Star, is to be when riſing to the Horizon of *London*, 20 or 32 Degrees off from the ſaid Star; therefore, as the Moons Separation exceeds that diſtance of 20 by 6 Degrees, and that if the Moon had gone through all the the 360 Degrees of Longitude, and arriv'd to the Horizon of *London* again, her gain of Diſtance from the ſaid Star, would have been 12 Degrees for that days Journey, and as it is but 6 Degrees, ſhe muſt therefore be arriv'd but half way round the Earth ; and conſequently ariſing to thoſe that are 180 Degrees of Longitude diſtant from *London*, for as ſhe advanceth in her Journey round the Earth ; ſhe alſo ſeparates her Diſtance from the ſaid Star proportionably ; for if ſhe be advanc'd but one Degree in Longitude ſhe can be but ſeparated, 2 Minutes of a Degree of Diſtance farther, and if two Degrees, then 4 Minutes, and ſo on, till ſhe hath gone through the 360 Degrees of Longitude, and arriv'd to the Horizon of *London* again, where her Separation is to be 12 Degrees farthar from *Aldebaran*, then is was at her riſing the Night before.

This Hypotheſis granted, their remains nothing but the Means to make it anſwer its deſired Effect ; which that it might do, *I* humbly propoſe, That there be Tables made of the Moons apparent different Diſtances, from ſome few Stars that lyes in her way ; likewiſe, that there be a Table to ſhew, how much this Diſtance, by being taken in different Latitudes, would Differ from the Diſtance, taken in the Latitude which the Tables were calculated to , and alſo, an Inſtrument proper to take Obſervation with. The which when perform'd, Mariners, by the Aſſiſtance of the aforeſaid Tables, and Inſtrument, may with the greateſt Facility, when they are at Sea, know in what Degree of Longitude they are in, when they have an Opportunity for Obſervation ; which they will very frequently have, as they come nearer the Equinoctial.

But as hitherto, there hath been no ſuch Tables calculated, neither can there be any Calculated, without a ſeries of Obſervation. For, as the

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Workman cannot build any Structure without Matter, to work upon, ſo neither can the Aſtronomer, make theſe Tables, without he has this Series of Obſervation to ground his Rules on. For thoſe Tables that are already form'd of the Moons Motion, have no Affinity with thoſe Tables that are wanted, for the Diſcovery of Longitnde: for the many motions that are required for the finding of an Eclipſe, will in this Method be Inſignificant, and Unneceſſary.

Therefore in Order to form the neceſſary Tables for the Diſcovery of Longitude, I moſt humbly Adviſe, That there be made a continued Series of Obſervation, with an Inſtrument fit for that Purpoſe, to ſhew how far the Moon appears to be diſtant from a Star, when ſhe is elevated above the Horizon of the Obſerver: That the time of Obſervation be exactly at one Hour after the Moon's riſing, or before ſetting, according as ſhe riſes or ſets in the Night; But if ſhe be diſtant enough from the Sun, then at two Hours, or more, according as the Obſerver approves of beſt. Provided always, that there be kept a Regular Time of Obſervation after her riſing or before her ſetting, regarding likewiſe, in what proportion the Moon increaſeth, or decreaſeth her different Diſtances, to or from the fix'd Stars obſerv'd to; which if on a ſetting Obſervation, muſt be the fix'd Stars to the Eaſt of the Moon; but if on a riſing one, then thoſe to the Weſt of Her. And alſo, that theſe Obſervations be made in different Degrees of Latitude, by ſeveral Obſervers; That by comparing and examining the one, by the other, the Differences between any Latitudue whatever, and the Latitude

titude the Obſervations are Calculated to, may more readily be Known.

Theſe, or other proper Expedients, that ſhall be Judg'd more Neceſſary, by thoſe Perſons the Wiſdom of theſe Moſt Honourable Houſes of Parliament ſhall appoint, to undertake this beneficial Employ, I do (in all humility) conceive, will be a ſufficient Guide to Aſtronomers, to direct them thereby, to calculate Tables for the Diſcovery of Longitude, agreeable to theſe or the like Obſervations.

This Method, will make all thoſe real, or imaignary motions of the Moon, perceptable but in one, that is, how far ſhe appears to be diſtant from the Star obſerv'd to; nor will her Latitude, North or South, or whether ſhe be in her Apogæon or Perigæon, be any Obſtacle or Hindrance: neither will it be neceſſary to know her Paralax; for the Moon's Diſtance from the Stars, being always taken at one time, either after her riſing, or before her ſitting, ſhe will always have the ſame diſtance from the Horizon of the Obſerver; and therefore, the ſame Paralax at one time as the other, when beheld from the ſame Stars. And as for ſolar Time, or the Moon's Age, there is no need for the Obſerver to know any; for the Moon's Revolutions being known, will ſupply the place of all thoſe Motions; which I humbly hope to make evidently appear, for if the Moon be 20 Degrees to the Eaſt of the Star called *Aldebaran*, ſhe cannot be at that ſame Diſtance again, until ſhe hath made her Revolution through the fixed Stars in her way, and is come up once more to the 20 Degrees off to the Eaſt of *Aldebaran*, in her ſecond Revolution; for as ſhe

ſhe goeth too great a diſtance from one Star, ſhe muſt be obſerv'd to another, ſo that, that Star which is within the Obſervation to Her, will ſhew the Obſerver how forward ſhe is in her Revolution; therefore, as before ſaid, there is no need of Solar time, nor the Moon's Age, for the Moon will never be in *Scorpio*, when ſhe is within an Obſervation of *Aldebaran*, either to the Weſt, or the Eaſt of it.

The Benefits and Advantages I imagin'd might accrue from theſe my Humble Labours, to all Mankind in general, and my Country in Particular, induc'd me to the Thoughts, of Contriving an Inſtrument fit to take Obſervation at Sea; which I having cauſed to be made, to my Great Trouble and Expence, I made my Applications to thoſe moſt worthy Perſons, appointed by Act of Parliament, to examine Sentiments concerning Longitude; but not having been ever able to obtain the Honour of being Heard before them, and not willing to ſlip any Opportunity of doing my Country ſervice, I ſacrific'd all my other Engagements on Shore, to accompliſh it, left my Habitation and Family, and took a Voyage to the Iſland of *Jamaica*, with my ſaid Inſtrument, intending by Reaſon of the Serenity of that Air, to make a Series of Obſervation, on this preceding Method (which here I have humbly recommended to the prudent Conſideration of Both theſe Honourable Houſes of Parliament) but in my Paſſage thither, had the Misfortune to have my ſaid Inſtrument broken on board the ſhip I was in, in a Storm; thereupon I was oblig'd to return back to *England*, without the Satisfaction of making one Obſervation; by reaſon there

was

was no Perſon in that Iſland, that could fit up my Inſtrument again. By which Miſhap, my intended Progreſs being retarded, and my Incapacity of Fortune, rendring Me not ſo uſeful to the publick Good, as I could earneſtly have wiſh'd to have been ; Therefore humbly Addreſſing theſe Honeſt Intentioned Productions of my Sudies, to the gracious Reception of Both theſe Honourable Houſes of Parliament, to whoſe moſt ſolid Judgment, I refer my ſelf, being at all times ready, both in Perſon and Eſtate, to ſerve my Country, on all occaſions ; and ſhall with the utmoſt alacrity, render the ſtricteſt Account of theſe my humble ſentiments when ever, and before what worthy perſons, Both theſe Moſt Honourable Houſes of Parliament ſhall think meet.

Stephen Plank.

Pelham-ſtreet, in
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